

IN THE CLAIMS:

1. (Currently Amended) A tool for changing the direction of drilling with drilling equipment, comprising:
 - at least two housing elements rotationally connected to one another in one direction, wherein a first housing element has a first guide;
 - a first passage for fluid through the tool; and
 - a hydraulic piston rotationally connected to a second housing element and having a second guide, wherein:
 - the guides and the piston-second housing connection are arranged, by the piston's axial displacement, to rotate the second housing element with respect to the first housing element,
 - necessary fluid pressure for moving the piston is obtained by choking the fluid flow through the tool, and
 - the tool is configured to change the direction of drilling in [[an]] a substantially infinitely variable manner in response to a change in flow rate of a drilling fluid.
2. (Previously Presented) The tool of Claim 1, wherein the first guide is formed in an inner wall of the first housing element, and the second guide is formed in an outer wall of the piston.
3. (Previously Presented) The tool of Claim 2, wherein the guides comprise twisted splines.
4. (Previously Presented) The tool of Claim 3, wherein the first spline extends along a substantial length of the first housing element and the second spline along a substantial length of the piston.

5. (Previously Presented) The tool of Claim 1, further comprising a valve comprising a valve seat formed at the upper end of a bore adapted to provide a passage through the piston, a valve body and a valve mechanism adapted for choking and opening the valve by increase and relief, respectively, of the fluid pressure in the tool.

6. (Previously Presented) A tool adapted for changing the direction of drilling with drilling equipment comprising a drill string, drill string sub, drilling engine and drill bit, wherein the tool is positioned between the drill string and the drill string sub and wherein the tool comprises:

housing elements, which are connected to one another, and wherein the tool has a passage for fluid, and wherein the tool is equipped with a hydraulic piston having a set of cooperating guides where the guides are arranged for, by the pistons axial displacement, a forced guiding of the rotation of a first housing element with respect to the other housing elements, and where necessary fluid pressure for moving the piston is obtained by choking the fluid flow through the tool and wherein a lower intermediate housing element and a lower housing element are connected by a one direction rotatable connection; and

a valve comprising:

a valve seat formed at the upper end of a bore adapted to provide a passage through the piston;

a valve body; and

a valve mechanism adapted for choking and opening the valve by increase and relief, respectively, of the fluid pressure in the tool, wherein the valve mechanism is formed by an upper and a lower valve body part adapted for displacement along the valve body, so that the lower valve body part can choke or open the valve, and a valve body spring, wherein the upper valve body part will displace the lower valve body part to choke the valve when the pressure of the fluid is increased, and the valve body part spring will displace the lower valve

body part in the opposite direction to open the valve by relief of the pressure of the fluid.

7. (Previously Presented) The tool of Claim 5, wherein the piston is adapted to be displaced by the fluid supplied to the tool when the valve has been choked, or be displaced in the opposite direction by a piston spring, positioned in an upper annular space, formed in the passage of the tool, after the valve has opened.

8. (Previously Presented) The tool of Claim 7, wherein the piston is sleeve-shaped, positioned between an upper shoulder formed in the passage of the tool, and a shoulder element located in the upper annular space and formed with a length which enables the piston to extend from the upper shoulder into the upper annular space located in an extension above a lower shoulder formed at the lower end of the upper annular space.

9. (Previously Presented) The tool of Claim 1, wherein the piston and the second housing element are rotationally connected in one direction.

10. (Previously Presented) The tool of Claim 9, wherein the connection between the piston and the second housing element is formed by a ratchet mechanism comprising catch elements locking against, or running freely across, a third guide formed at the upper end of the second housing element, so that the second housing element is subjected to rotation when the piston is displaced down the tool, but not subject to rotation when the piston is displaced back up the tool.

11. (Previously Presented) A tool adapted for changing the direction of drilling with drilling equipment comprising a drill string, drill string sub, drilling engine and drill bit, wherein the tool is positioned between the drill string and the drill string sub and wherein the tool comprises:

housing elements, which are connected to one another, and wherein the tool has

a passage for fluid, and wherein the tool is equipped with a hydraulic piston having a set of cooperating guides where the guides are arranged for, by the pistons axial displacement, a forced guiding of the rotation of a first housing element with respect to the other housing elements, and where necessary fluid pressure for moving the piston is obtained by choking the fluid flow through the tool and wherein a lower intermediate housing element and a lower housing element are connected by a one direction rotatable connection, and wherein the piston is adapted to be displaced by the fluid supplied to the tool when the valve has been choked, or be displaced in the opposite direction by a piston spring, positioned in an upper annular space, formed in the passage of the tool, after the valve has opened, and wherein the lower housing element has a lower annular space arranged thereto, for fluid which is displaced from the upper annular space, and wherein the annular spaces communicate by means of channels extending between the annular spaces respectively, and wherein the flow of displaced fluid can be controlled by a check valve and a choke valve placed in the respective channels;

a valve comprising:

a valve seat formed at the upper end of a bore adapted to provide a passage through the piston,

a valve body and

a valve mechanism adapted for choking and opening the valve by increase and relief, respectively, of the fluid pressure in the tool.

12. (Previously Presented) The tool of Claim 11, wherein the lower annular space has a displaceable annular space body arranged thereto.

13. (Previously Presented) The tool of Claim 6, wherein the valve body and the upper valve body part are formed with bores, so that a cable can be drawn through the passage of the tool.

14. (Previously Presented) The tool of Claim 1, wherein the one direction rotational connection between the housing elements comprises a roller bearing adapted for rotation in one direction and opposing rotation in the opposite direction in any rotational position.

15. (Previously Presented) The tool of Claim 1, further comprising a second passage for fluid defined by an inner wall of the first housing element and an outer wall of the second housing element, wherein a choke valve is disposed within the second passage for controlling the speed of rotation of the tool.

16. (Currently Amended) A tool for changing the direction of drilling with drilling equipment, wherein the tool is configured to change the direction of drilling in a substantially infinitely variable manner in response to a sustained change in flow rate of a drilling fluid without aid from a rotary table.

17. (Currently Amended) A tool for changing the direction of drilling with drilling equipment, comprising:
means for rotating a bent sub in a substantially infinitely variable manner; and
means for controlling the speed of rotation of the tool.

18. (Canceled)

19. (Currently Amended) A method for changing the direction of drilling with drilling equipment, wherein a tool is disposed in a drill string and a drilling fluid is being injected through the drill string at a flow rate to facilitate drilling in a first direction, comprising:
increasing the flow rate of drilling fluid for a sustained period of time, wherein the tool changes the direction of drilling from the first direction to any desired second direction in response to the increase in flow rate and without aid from a rotary table; and
decreasing the flow rate ~~flow rate~~ of drilling fluid when the second direction is reached.

20. (Previously Presented) The tool of Claim 5, wherein the valve mechanism is formed by a valve body part adapted for displacement along the valve body, so that the valve body part can choke or open the valve, and a valve body spring, wherein the valve body part will displace along the valve body when a flow rate of the fluid is increased, and the valve body part spring will displace the valve body part in the opposite direction to open the valve when the flow rate of fluid is decreased.

21. (Previously Presented) The tool of Claim 20, wherein the valve body is formed with a bore, so that a cable can be drawn through the passage of the tool.

22. (Previously Presented) The tool of claim 7, wherein the second housing element comprises a first and a second annular space arranged thereto, for fluid which is displaced from the first annular space; the annular spaces communicate by channels extending between the annular spaces respectively; and the flow of displaced fluid can be controlled by a check valve and a choke valve placed in the respective channels.

23. (Previously Presented) The tool of Claim 22, wherein a displaceable annular space body is disposed in the second annular space.

24. (Currently Amended) ~~The tool of Claim 16~~ A tool for changing the direction of drilling with drilling equipment, comprising:

a first housing; and

a piston configured to rotate relative to the first housing when actuated by a fluid pressure,

wherein the tool is configured to change the direction of drilling in a substantially infinitely variable manner in response to a sustained change in flow rate of a drilling fluid.

25. (Previously Presented) The tool of Claim 24, further comprising:
a valve configured to choke the flow of the drilling fluid through the tool, thereby providing the fluid pressure to actuate the piston.
26. (Previously Presented) The tool of Claim 24, wherein the first housing comprises a first guide, the piston comprises a second guide, and interaction of the guides causes the piston to rotate relative to the first housing upon actuation of the piston.
27. (Previously Presented) The tool of Claim 24, further comprising a second housing rotationally connected to the piston in a first direction and rotationally connected to the first housing in a second direction which is opposite to the first direction.
28. (Previously Presented) ~~The tool of Claim 16~~ A tool for changing the direction of drilling with drilling equipment, wherein:
the tool is configured to change the direction of drilling in a substantially infinitely variable manner in response to a sustained change in flow rate of a drilling fluid, and
the tool is configured to change the direction of drilling while drilling.
29. (Previously Presented) ~~The tool of Claim 16~~ A tool for changing the direction of drilling with drilling equipment, wherein:
the tool is configured to change the direction of drilling in a substantially infinitely variable manner in response to a sustained change in flow rate of a drilling fluid, and
the drilling equipment comprises a drill bit, and
the tool is configured to change the direction of drilling without substantially reducing admission of the drill bit.
30. (Currently Amended) The tool of Claim 16, wherein the drilling equipment comprises a bent sub and the tool is configured to change the direction of drilling by being configured to rotate [[a]] ~~the bent sub coupled to the tool.~~